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10/694,833	10/29/2003	Peter Ashwood-Smith	38898-0034	2487

  

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EXAMINER	
LAI, MICHAEL C	

  

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2109	

  

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/694,833

Applicant(s)

ASHWOOD-SMITH, PETER

Examiner

Michael C. Lai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 13-23, 26-36, 39-46, 49 is/are rejected.
- 7) ☒ Claim(s) 11, 12, 24, 25, 37, 38, 47 and 48 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Priority*

This application has no priority claim made. The filing date is 10/29/2003.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 - 2, 9 – 10, 13 – 15, 22 – 23, 26 – 28, 35 – 36, 39 – 40, 45 – 46, and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Rosen et al. (RFC 2547 “BGP/MPLS VPNs”), hereinafter referred to as Rosen.

3. Regarding claims 1, 14, 27, and 40, Rosen discloses a method of forming a virtual private network within a mesh network of nodes, the virtual private network including member nodes selected from the network of nodes, the method comprising the steps of: (a) distributing a membership message to the member nodes, said membership message including a VPN identifier (Section 4: PE routers use BGP to distribute VPN routes to each other . Also Section 4.1, para. 1: an 8-byte “Route Distinguisher (RD)” as VPN ID); (b) at each member node, determining a topology for the virtual private network, wherein for each of the member nodes said topology identifies at least one adjacent member node (Section 1.5: “Each PE router needs to maintain a number of separate forwarding tables. Every site to which the PE is attached must be mapped to one of those forwarding tables,…” Note that determining

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routing tables is equivalent to determining a topology.); and (c) creating label switched paths between the member nodes and their adjacent member nodes, thereby

establishing the virtual private network having said topology (Section 4.2.2, para. 4:

"When a PE router distributes a VPN-IPv4 route via BGP, it uses its own address as the "BGP next hop". It also assigns and distributes an MPLS label..." Also in Abstract:

"MPLS (Multiprotocol Label Switching) is used for forwarding packets over the backbone, and BGP (Border Gateway Protocol) is used for distributing routes over the backbone.).

4. Regarding claims 2, 15, and 28, Rosen further discloses: wherein said step of creating label switched paths includes sending MPLS/GMPLS set-up control messaging (Abstract: "MPLS (Multiprotocol Label Switching) is used for forwarding packets over the backbone).

5. Regarding claims 9, 22, 35, and 45, Rosen further discloses: including a step of populating a forwarding table at the member nodes (Section 1.5: Each PE router needs to maintain a number of separate forwarding tables. Every site to which the PE is attached must be mapped to one of those forwarding tables...).

6. Regarding claims 10, 23, 36, and 46, Rosen further discloses: including a step of providing a signaling protocol on said label switched paths having a multi-level label stack (Abstract: BGP (Border Gateway Protocol) is used for distributing routes over the backbone. Section 5: MPLS with a two-level label stack.).

7. Regarding claims 13, 26, 39, and 49, Rosen further discloses: a step of broadcasting a data packet from one of the member nodes to the other member nodes

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over the virtual private network (Section 4: PE routers use BGP to distribute VPN routes to each other).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3 – 6, 16 – 19, 29 – 32, and 41 - 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosen, in view of Tomizawa et al. (US 6,202,082), hereinafter referred to as Tomizawa.

10. Regarding claims 3, 16, 29, and 41, Rosen does not specifically disclose: wherein said topology is a ring and wherein said step of creating label switched paths establishes a closed-loop sequence of label switched path. However, Tomizawa discloses a ring network (FIG. 27). Therefore it would have been obvious to one of ordinary skill in the art to incorporate Tomizawa's teaching into Rosen's system to have a ring topology and establish a closed-loop sequence of label switched path. The motivation would be taking the advantages of the Token Ring Technology, mainly highly deterministic response time and resistance to sudden performance decreases.

11. Regarding claims 4, 17, 30, and 42, Rosen does not specifically disclose: wherein said membership message includes relative position information, said relative position information specifying the position of the member node on said ring relative to the other member nodes. However, Tomizawa discloses the relative position

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information in a ring (FIG. 26). Therefore it would have been obvious to one of ordinary skill in the art to incorporate Tomizawa's teaching into Rosen's system to have relative position information specifying the position of the member node on said ring relative to the other member nodes. The motivation would be taking an advantage of the Token Ring Technology, deterministic nature.

12. Regarding claims 5, 18, 31, and 43, Rosen does not specifically disclose:

wherein said relative position information includes a sortable value, and wherein said step of determining said topology includes sorting said relative position information.

However, Tomizawa discloses sortable values for relative position information (FIG. 3 Nodes A, B, C and FIG. 13 Nodes 31 – 35). Therefore it would have been obvious to one of ordinary skill in the art to incorporate Tomizawa's teaching into Rosen's system to have a topology including sorting said relative position information. The motivation would be easy processing for computer programs.

13. Regarding claims 6, 19, 32, and 44, Rosen does not specifically disclose:

wherein said relative position information includes an ordinal, and wherein said step of determining topology includes identifying two adjacent member nodes as the member node having the next highest ordinal and the member node having the next lowest ordinal. However, Tomizawa discloses ordinal numbers for member nodes (FIG. 13, Nodes 31 – 35). Therefore it would have been obvious to one of ordinary skill in the art to incorporate Tomizawa's teaching into Rosen's system to have said relative position information includes an ordinal, and wherein said step of determining topology includes identifying two adjacent member nodes as the member node having the next highest

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ordinal and the member node having the next lowest ordinal. The motivation would be having an orderly system and easier for maintenance.

14. Claims 7 – 8, 20 – 21, 33 -34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosen, in view of Tomizawa, and Briskey et al. (US 6,490,693 B1), hereinafter referred to as Briskey.

15. Regarding claims 7 – 8, 20 – 21, 33 -34, Rosen and Tomizawa do not disclose methods for adding/removing member nodes in a ring. However, Briskey disclose a dynamic reconfiguration of a quorum group of nodes (FIGs 1 –5, and col. 2, lines 13 – 39). Therefore it would have been obvious to one of ordinary skill in the art to incorporate Briskey's teaching into Rosen's and Tomizawa's system to include steps of: (claim 7) adding a new member node, two of the member nodes being neighbour member nodes to said new member node on said ring, wherein said step of adding a new member node includes creating label switched path segments between said new member node and each of said neighbour member nodes before dropping a label switched path segment between said neighbour member nodes; (claim 8) removing a selected member node, two of the member nodes being neighbour member nodes to said selected member node on said ring, wherein said step of removing includes creating a label switched path segment between said neighbour member nodes before dropping label switched paths between said selected node and each of said neighbour member nodes. The motivation would be to be able to do dynamic reconfiguration.

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***Allowable Subject Matter***

16. Claims 11 – 12, 24 – 25, 37 – 38, and 47 – 48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The reason for allowable is the prior art (RFC 2547, BGP/MPLS VPNs) only has a two-level label stack, but the claims have a 3-layer label stack.

***Remarks***

17. The following pertaining arts are discovered and not used in this office action. Office reserves the right to use these arts in later actions.

- Hama (US 7,072,346 B2) Network and Edge Router
- Roper et al. (US 5,630,184) Method of Deleting and Adding Nodes in a Spanning Tree Network by Collating Replies from Other Nodes
- Ueno (US 6,888,847 B2) Packet Transfer Method and Apparatus

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Lai whose telephone number is (571) 270-3236. The examiner can normally be reached on M-F 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marvin Lateef can be reached on (571) 272-5026. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael C. Lai  
03AUG2007

  
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SUPERVISORY PATENT EXAMINER